the Oxford jaw is the type, *Ursus anglicus magdalenensis*, in honour of the College within whose walls it was excavated, and of whose foundation I have been a member for more than a third of a century.

EXPLANATION OF THE PLATES.

Plate II.

Lower jaws of Pleistocene bears.

Fig. 1. Jaw from Whitesand Bay, referred to "*Ursus arctos.*"
Fig. 2. „ Magdalen College, „ *U. anglicus*, sp. n.
Fig. 3. Molar range of Whitesand Bear, "*U. arctos.*"
Fig. 4. „ „ Grays „ "*U. horribilis.*"
Fig. 5. „ „ Magdalen „ *U. anglicus*, sp. n.

Plate III.

Fig. 6. Condyle and angle from behind, Whitesand Bear.
Fig. 7. „ „ „ Grays Bear.
Fig. 8. „ „ „ Magdalen Bear.
Fig. 9. Angle and subangle from below, Whitesand Bear.
Fig. 10. „ „ „ Grays Bear.
Fig. 11. „ „ „ Magdalen Bear.
Fig. 12. „ „ „ *U. fossilis*, Goldfuss.

a., angle of jaw; *s.*, subangle of jaw; *c.*, condyle of jaw.

XLIX.—*Notes on some British and North African Specimens of* Apus cancriformis, *Schaeffer.* By Robert Gurney, M.A., F.L.S.

Before proceeding to the subject of this communication, it is unfortunately necessary for me to defend the use of the name *Apus* for a genus of Crustacea.

This name has been used for generations as the generic name of the Branchiopod Crustacean *Apus cancriformis*, which, from its extreme morphological importance, has figured largely in zoological literature. For this reason, its suppression by systematists, on the ground that its use is not in accordance with the International Rules of Nomenclature, will certainly not be agreed to by writers on general zoological problems, who will no doubt continue to refer to this animal as *Apus cancriformis*. It can scarcely be to the advantage of Zoology that, in this as in many other instances since these Rules came into force, the biologist and the systematist should adopt different systems of nomenclature.

In my opinion, names long in *general* use should not be changed or suppressed, except for the most cogent reasons and in cases where there is obvious ambiguity. In this case no ambiguity or doubt has ever attached to the name *Apus*, until the introduction of the Rules gave authority to unearth names which were still-born and should have remained decently interred.

It has been found that Scopoli in 1777 had named as *Apus* the bird which we have hitherto known as *Cypselus*; wherefore, not only must *Cypselus* lapse, but *Apus*, Latreille (1801), applied to our Crustacean, must also disappear as being preoccupied by *Apus*, Scopoli. But Scopoli had on a previous page described a Crustacean under the name of *Apos*, so that, as this name has priority over *Apus*, it is open to argument that the latter, which differs by only one letter, is thereby invalidated. The ground, therefore, on which *Apus* is transferred to a bird is not, even according to the Rules, by any means secure, and, having regard to the extreme inconvenience of the change, it is surprising that anyone should be found to support it.

Apos, Scopoli, might conceivably be used *pari passu* with *Apus*, but Scopoli's Crustacean was an Anostracan, and his name is a synonym of *Branchipus*. In view of these facts, Keilhack (1909) has revived the genus *Triops*, Schrank *, to replace the Crustacean genus *Apus*, a course which has been followed by others.

I am, however, of the opinion that, where the International Rules obviously conflict with common-sense, there is no obligation that they should be followed, and that, though allegiance to rules of nomenclature is in general desirable and necessary, they should not be allowed entirely to fetter individual judgment. Further, that those concerned with the systematics of one group of the animal kingdom should have regard to the consequences of their actions upon other groups with which they are not familiar.

In this particular instance, I hold that ornithologists should acknowledge that *Apos*, Scopoli, invalidates *Apus*, Scopoli, and should retain *Cypselus*, which is a well-established name. If this be admitted, *Apus*, Latreille, may (by the rules of common-sense †) continue to be used in its old sense, and *Triops*, Schrank, may return to the obscurity from which it was unearthed.

Ghigi (1921) has recently described three new species of *Apus* from the Mediterranean region, all of which are related to *A. cancriformis*, while one of them (*A. mauritanicus*) is founded on specimens already named by Daday as *A. cancriformis*. In separating these species, Ghigi has relied largely on three characters :—

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* Schrank wrote this name both *Triops* and *Triopes*. Ghigi (1921) uses a third name—*Thriops*.

† It must be admitted that *Apus*, Latr., is in any case condemned as a homonym by Art. 34 of the International Rules.

(1) The presence or absence of teeth on the median carina of the dorsal shield.

(2) The form of the spines encircling the abdominal segments.

(3) The armature of the last abdominal segment or telson.

The first two of these characters have not previously been regarded as of great importance in discriminating species, and it seemed to me worth while to examine such specimens of *A. cancriformis* as I possess to see how far these characters can be regarded as constant. My material, all of which I have regarded as belonging to the true *A. cancriformis*, is as follows :—

(1) A number of mature, but small, specimens taken by Mr. Balfour Browne from a pool on Preston Merse, Kirkcudbrightshire, in Sept. 1907 (see 'Nature,' lxxvi. 1907, p. 589).

(2) Ten specimens, male and female, from near Tilghemt, 92 miles south of Laghouat in Algeria.

(3) Two specimens from Laghouat. These and the preceding were taken by Dr. E. Hartert in April 1911.

(4) A few females taken by me in March 1913 from a pool by the Tunis–Bizerta road in Tunisia.

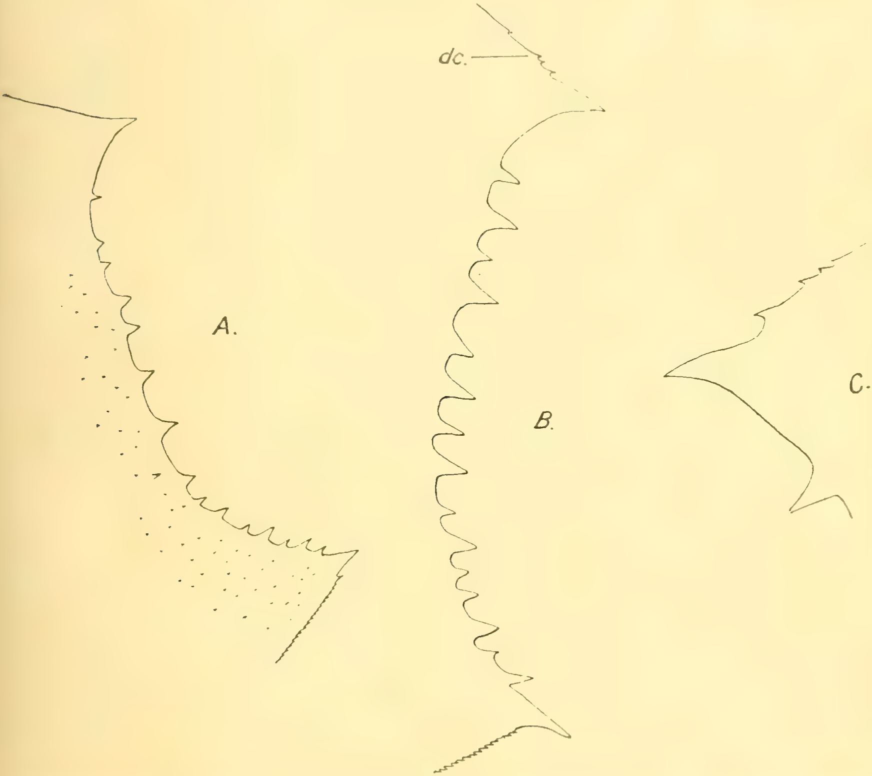
With regard to the three characters named, the result of comparison of this material is as follows :—

(1) In all the Algerian and Tunisian specimens the dorsal carina is perfectly smooth, but, whereas in the Tunisian examples it ends posteriorly in a conspicuous spine, in those from Algeria this spine is either quite small or entirely absent. In the Scottish individuals the conditions are not the same. Here the carina ends in a large spine projecting into the posterior sulcus, and in nearly every case there are one or more small incisions or teeth in its posterior part (fig. 1, B, C). In this respect the Scottish examples differ from the type and approach Ghigi's species *A. mauritanicus*. In one or two cases (Tunis) I have found small denticles scattered on the shield posteriorly (fig. 1, A).

(2) I cannot follow Ghigi in attaching importance to the differences described by him in the size and shape of the marginal spines of the abdominal segments. Whether these spines project or not beyond the edge of the segment

depends largely on the degree of contraction of the abdomen. While the ventral spines of the Scottish specimens are always rather long and pointed, they are short and broad in those from Tunis, but still project beyond the segment. In the Tilghemt examples these spines are short and squamiform as in *A. mauritanicus*.

Fig. 1.



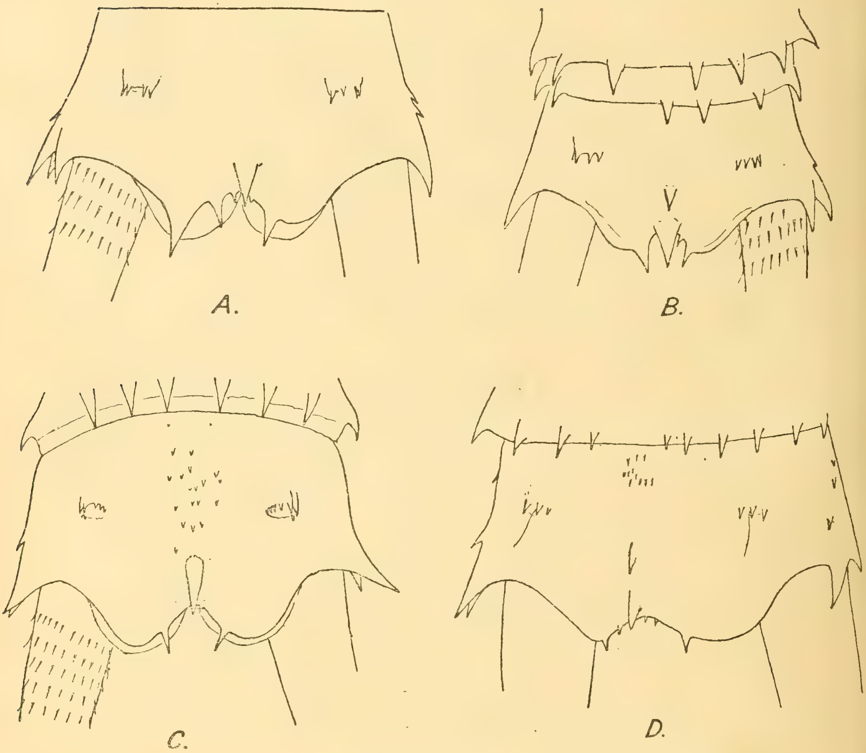
Posterior margin of shell, seen from the side. A. Specimen from Tunis; B (more magnified), from Scotland: *dc.*, dorsal carina, showing teeth. C. Another specimen from Scotland, showing toothed carina.

(3) The form of the telson in *A. cancriformis* and also in Ghigi's new species is very constant, but there are differences in the number and arrangement of the spines thereon. In *A. mauritanicus* the only difference from the type apparently consists in this—that the two lateral spines over the insertion of the furcal rami are of unequal size, the lower one being

the smaller, and that the posterior sulcus is margined by a few small spinules.

The telson of *A. simplex*, Ghigi, differs from the type only in a slightly different arrangement of the posterior marginal spinules, while *A. apulius*, Ghigi, is distinguished by having two strong median dorsal spines in front of the usual posterior median spine, and also a few spinules on the dorsal surface laterally.

Fig. 2.



Dorsal view of telson. Specimens from: A and B, Scotland; C, Tunis; D, Algeria (Laghouat).

Now, although the Algerian and Tunisian specimens show very little variability with regard to the telson, they do vary to some extent :—

(*a*) Six out of ten have exceedingly small denticles scattered irregularly over the whole or part of the dorsal surface. (The ventral surface is always smooth.)

(*b*) In two there is an additional large median dorsal spine (fig. 2, D).

(*c*) Several have lateral groups of denticles.

(*d*) The spines on the outer angles may be from one to four. Usually there are two large spines, but there may be one large one overlapping a smaller one as in *A. mauritanicus*, three equally large, or two large and two small.

The Scottish specimens also are variable in respect to the marginal spines, though none have the scattered surface-denticles noticed above. The marginal spines are arranged differently in almost every individual, and I have seen also in some cases an additional large median dorsal spine (fig. 2, B).

I conclude from these facts that the differences in respect of these characters relied upon for the separation of Ghigi's species are really within the limits of normal variation of *A. cancriformis.*

There are, however, other characters which are regarded as specific, and may be touched upon :—

(1) Length of the longest flagellum of the first leg. Typically this flagellum reaches about to the end of the dorsal shield. In *A. apulius* it reaches to the base of the telson, and even exceeds the whole body in *A. mauritanicus*. Now all my Algerian specimens except one agree, in that the flagellum reaches but little beyond the shield; but in this one, and in all those from Scotland, it reaches to the base of the telson. It is evident that this character is not so constant as has been supposed.

(2) Number of legless segments. This is undoubtedly the most reliable specific character for use in this difficult genus, but even here there is a limited variability. According to Simon and others, there are, in *A. cancriformis*, 6 legless segments in the female and 7 in the male. But I find among twelve of my Scottish specimens that only three have 6 and nine have 7 of these segments. Among the Tunisian and Algerian individuals the majority of females have 7 and the males have 8. One of the characters given for *A. mauritanicus* is the possession of 7 legless segments in the female and 8 in the male, and it is clear that this is not in itself of much importance. Braehm (1893) examined a large material, and found that these legless segments vary from 5 to 7 in the female and from 6 to 8 in the male.

(3) The number of segments uncovered by the dorsal shield is often given as a specific character, though it is

generally recognised to be somewhat unreliable. In my Scottish material the number varies from 11 to 20, with an average of 17. The average numbers for the North African specimens are:—Tunis, 15; Tilghemt, 19; Laghouat, 18. Lilljeborg gives 16 for typical *A. cancriformis.* With regard to this character, all Ghigi's species are rather distinct, having in each case very few uncovered segments, but I do not think that too much importance should be attached to this point.

(4) The number and size of the denticles on the posterior sulcus of the dorsal shield is a character of some importance in comparing species of the *cancriformis* and *numidicus* group, but in the former species the variation is considerable and Ghigi's species fall well within its range of variation. Among Scottish specimens the number varies from 20–30 (average 26), while the average for the North African form is 30 (Tunis) or 28 (Tilghemt). Simon gives the number as 28 to 35.

I conclude from all this that all three of Ghigi's new species should be regarded as synonyms of *A. cancriformis.*

There are three other species which have been generally overlooked, but which should also probably be included in *A. cancriformis.* I refer to *Apus haliciensis*, *A. lublinensis*, and *A. varsoviensis* of Fiszer (1885). I am unable to read Fiszer's Polish description, but I cannot see in his figures any reason for regarding these species as distinct.

It must be admitted that the genera *Apus* and *Lepidurus* are extraordinarily difficult to deal with systematically, but it is clear that any attempt to found new species within them must be based upon an examination of a large amount of material.

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L.—*Notes on a new Subfossil Bear from Sweden.*

By EINAR LÖNNBERG, F.M.Z.S., etc.

[Plate IV.]

IN connection with the notes concerning the Bears of the *pruinosus* group, recently read before the Zoological Society of London, it may be of interest to draw attention to